

**What is claimed is:**

1        1. A plasma display panel, comprising:  
2        a phosphor layer between a pair of opposing substrates;  
3        said phosphor layer emitting light through excitation by vacuum ultraviolet  
4 radiation;  
5        said phosphor layer containing spherical fine particles of a luminescent material  
6 that is excited by vacuum ultraviolet radiation (VUV).

1        2. A plasma display panel as described in Claim 1, wherein:  
2        said VUV-excited luminescent material is fine particles of a perfect sphere-shape.

1        3. A plasma display panel described in Claim 2, wherein:  
2        said VUV-excited luminescent material has a particle size of 2 micrometers or  
3 less.

1        4. A plasma display panel described in Claim 2 or 3, wherein:  
2        said VUV-excited luminescent material is a BAM-type luminescent material  
3 represented by  $\text{BaMgAl}_{10}\text{O}_{17}:\text{Eu}$ .

1        5. A process for producing a plasma display panel having a phosphor layer which  
2 is placed between a pair of opposing substrates and which contains a VUV-excited  
3 luminescent material which emits light through excitation by vacuum ultraviolet radiation,  
4 comprising:

5        a reaction step in which a metal ion solution of VUV-excited luminescent material  
6 is atomized and formed into spherical fine particles under a heated atmosphere of 500-  
7 1500 degrees C;

8        a baking step in which said spherical particles formed in said reaction step are  
9 heated to a temperature greater than in said reaction step.

1        6. A process for producing a plasma display panel as described in Claim 5,  
2 wherein:  
3        said heating temperature of said baking step is 1000-1700 degrees C.

1           7. A process for producing a plasma display panel as described in Claim 5 or 6,  
2 wherein:  
3           said baking step is conducted in an atmosphere of oxygen concentration of 0.02  
4 ppm or less and water concentration of 0.5 ppm or less.

1           8. A process for producing a plasma display panel as described in Claims 5, 6 or 7,  
2 wherein:  
3           in said reaction step, a fluxing agent or thickener is further added to said metal ion  
4 solution.

1           9. A process for producing a plasma display panel as described in Claim 8,  
2 wherein:  
3            $\text{NH}_4\text{BF}_4$  is added as said fluxing agent.

1           10. A VUV-excited luminescent material, comprising:  
2 VUV-excited luminescent material which emits light through excitation by  
3 vacuum ultraviolet radiation;  
4           said VUV-excited luminescent material being fine particles of perfectly spherical  
5 shape.

1           11. A process for producing VUV-excited luminescent material as described in  
2 Claim 10, comprising:  
3           a reaction step in which a metal ion solution containing a matrix substance and an  
4 activator which constructs said VUV-excited luminescent material is atomized and  
5 formed into spherical fine particles under a heated atmosphere of 500-1500 degrees C;  
6           a baking step in which said spherical particles formed in said reaction step are  
7 heated to a temperature greater than said reaction step.